

Message Text

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ACTION EUR-25

INFO OCT-01 ARA-16 EA-11 NEA-10 ADP-00 SCI-06 NSC-10 HEW-08

DOTE-00 INT-08 HUD-02 DODE-00 CEQ-02 EPA-04 EB-11

IO-13 OIC-04 CIAE-00 PM-07 INR-10 L-03 NSAE-00 PA-03

RSC-01 PRS-01 USIA-12 TRSE-00 SAJ-01 SS-15 COME-00

SCEM-02 AEC-11 RSR-01 /198 W

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FM AMEMBASSY ROME

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INFO USMISSION NATO

AMEMBASSY ANKARA

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E.O. 11652 N/A

TAGS: SENV, NATO

SUBJ: CCMS: GEOTHERMAL ENERGY PROJECT

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1. /SUMMARY/: MEETING BETWEEN US CCMS GEOTHERMAL ENERGY TEAM AND FRENCH GROUP OF 14 4 REPRESENTING NINE ORGANIZATIONS TOOK PLACE AFTERNOON JULY 9 IN PARIS. MEETING WAS CHAIRED BY PROFESSOR JEAN GOGUEL, VICE PRESIDENT OF BUREAU DES RECHERCHES GEOLOGIQUES ET MINIERES (BRGM). US TEAM EXPLAINED GENERAL SCOPE OF CCMS PROJECT AND PURPOSE OF VISIT. FRENCH GROUP DESCRIBED FRENCH GEOTHERMAL WORK.

AT PRESENT THE FRENCH PROGRAM IS MADE UP OF MANY DISCONNECTED PARTS AND IS NOT BEING STRESSED AS AN IMPORTANT ENERGY PROBLEM. HOWEVER GOGUEL STATED THAT A CONSEQUENCE OF THE CCMS MEETING HE HOPED THAT THE FRENCH GEOTHERMAL PROGRAM MIGHT COME TO-GETHER AND GAIN IN IMPORTANCE.

FRENCH EXPRESSED INTEREST IN COOPERATIVE PROJECTS INVOLVING THE LEGAL ASPECTS OF GEOTHERMAL ENERGY PRODUCTION, METHODS OF PREVENTING SCALING, MODELLING OF GEOTHERMAL SYSTEM AND COMPUTER ANALYSIS OF HEAT TRANSFER AND FLUID FLOW CHARACTERISTICS OF HYDROTHERMAL AND DRY HOT ROCK SYSTEM.

GOGUEL STATED THAT MR. SANGNIER, DIRECTOR OF DELEGATION GENERALE A LA RECHERCHE SCIENTIFIQUE ET TECHNIQUE, 35 RUE SAINT DOMINIQUE, PARIS 7 (TEL: 551-74-50), WOULD BE FRENCH CONTACT POINT FOR PROJECT AND THAT FRENCH LOOKED FORWARD TO US PROPOSALS. END SUMMARY.

2. GEOTHERMAL PROJECTS WITHIN FRANCE MAINLY DEAL WITH LABORATORY AND THEORETICAL STUDIES OF HOT WATER - ROCK INTERACTIONS. ONLY 8 GOVT PROFESSIONALS ARE CURRENTLY WORKING ON GEOTHERMAL ENERGY AREA. LITTLE EFFORT IS DIRECTED TOWARD DEVELOPMENT OF GEOTHERMAL ENERGY IN FRANCE BECAUSE (1) THE MINING LAWS ARE UNFAVORABLE AND (2) THERE IS A CONFLICT OF INTEREST WITH THE LARGE AND LUCRATIVE HEALTH SPA INDUSTRY. GOQUEL REPORTS THAT THE PRESENT MINING LAWS, WHICH DO NOT PROVIDE FOR OWNERSHIP OF GEOTHERMAL RIGHTS, IN EFFECT PREVENT PRIVATE INTERESTS FROM DEVELOPING GEOTHERMAL AREAS EVEN WHEN FOUND TO BE EXPLOITABLE.

3. OTHER THAN HEALTH SPAS, THE ONLY AREA IN FRANCE IN WHICH GEOTHERMAL ENERGY IS BEING USED IS AT MELUN, 50 KM FROM PARIS, UNCLASSIFIED

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WHERE HOT WATER IS USED FOR SPACE HEATING. ONE THOUSAND FLATS ARE PRESENTLY SUPPLIED BY GEOTHERMAL HOT WATER; THERE IS A POTENTIAL FOR SUPPLYING 3000 FLATS. TWO DRILL HOLES 1700 METERS DEEP PENETRATE A VERY PERMEABLE AQUIFER IN WARM ROCK (WHICH WAS FOUND DURING OIL EXPLORATION).

WATER IS PUMPED OUT ONE HOLE AT 80°C AND REINJECTED INTO THE SAME AQUIFER VIA THE SECOND HOLE. THERE HAS BEEN NO CHANGE IN

TEMPERATURE OR FLOW RATE SINCE THE PROJECT WAS STARTED IN 1969. COSTS COMPARED TO CONVENTIONAL FUEL OIL HEATING ARE CUT BY 60 PERCENT. AN ANNUAL AVERAGE OF 10 PERCENT OF THE THERMAL ENERGY REQUIREMENTS FOR THESE FLATS MUST BE BY FUEL OIL. REINJECTION OF THE BRINES WAS STARTED IN ORDER TO AVOID CONTAMINATION OF POTABLE WATER IN SHALLOW AQUIFERS BY THE BRACKISH WATER USED IN THIS SYSTEM.

4. LABORATORY AND THEORETICAL STUDIES INCLUDE THE FOLLOWING:

- (1) STUDIES OF ALTERATION AND MASS TRANSPORT OF MATERIALS IN A THERMALLY CONVECTING SYSTEM (200,000 FR FOR 18 MONTHS) CARRIED OUT AT ORELANS.
- (2) STUDY OF VAPORIZATION OF WATER IN A POROUS MEDIUM (260,000 FR FOR 18 MONTHS) CARRIED OUT AT TOULOUSE. THIS STUDY IS BEING DONE BY PETROLEUM ENGINEERS CONCERNED WITH SECONDARY RECOVERY OF OIL BY STEAM INJECTION.

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(3) STUDY OF FLOW CHARACTERISTICS AND HEAT TRANSFER FOR
WATER-STEAM MIXTURES IN CRACKS (100,000 FR FOR 1 YEAR) CARRIED
OUT AT TOULOUSE.

(4) COMPUTER MODELING STUDIES BY BRGM.
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5. ELECTRICITE DE FRANCE DECIDED 12 YEARS AGO AFTER MUCH STUDY
TO CONCENTRATE GEOTHERMAL RESEARCH IN OVERSEAS TERRITORIES
WHERE OVERPOPULATION, NO INDUSTRY AND VOLCANES. A MAJOR
EFFORT IN GEOTHERMAL ENERGY EXPLORATION HAD BEEN CONDUCTED IN
ALGERIA BEFORE THE FRENCH WITHDRAWAL FROM THAT AREA. THEY
ARE DOING NOTHING THERE AT PRESENT. THEIR MAJOR EFFORT IN
GEOTHERMAL ENERGY EXPLORATION IS CONCENTRATED IN THE WEST
INDIES AND IN THE FRENCH TERRITORIES AFARS AND ISAS (FTAI).
COME WORK WAS CARRIED OUT IN THE NEW HEBRIDES 14 YEARS AGO.
THIS MAY RESUME WHORTLY. EXPLORATION FOR GEOTHERMAL ENERGY
HAS BEEN CONDUCTED FOR 3 YEARS IN THE FTAI. HOWEVER, THERE
HAS BEEN NO DRILLING THERE.

6. EURAFREP HAS CONDUCTED EXTENSIVE DRILLING IN BOTH MARTINIQUE
AND GUADALUPE IN WEST INDIES. ON MARTINIQUE ONE UNSUCCESSFUL
HOLE ABOUT 400 METERS DEEP WAS DRILLED. THAT DISCOURAGING
RESULT CAUSED A SHIFT IN EMPHASIS TO GUADALUPE. AT GUADALUPE
THREE HOLES HAVE BEEN DRILLED (ALL ABOUT 400 METERS DEPTH);
TWO WERE SUCCESSFUL AND ONE WAS NOT. BOTTOM HOLE TEMPERATURES
ARE ABOUT 240/C. IN THE SPRING OF 1974, IT IS PLANNED TO DRILL
ONE OR TWO ADDITIONAL WELLS. IF THESE ARE SUCCESSFUL, IT
IS EXPECTED THAT ELECTRICITE DE FRANCE WILL CONSTRUCT 5-10
MEGAWATTS PLANT BY 1975-76. SUCH A PLANT WOULD SUPPLY A
SIGNIFICANT PORTION OF GUADALUPE'S ELECTRICAL POWER NEEDS.
THE PRESENT CONSUMPTION IS ABOUT 20 MEGAWATTS AND BY 1980 THE
NEED WILL BE ABOUT 30 MEGAWATTS.

7. THE FRENCH ARE TECHNICAL CONSULTANTS TO THE DRILLING
OPERATIONS WHICH WILL BE UNDERTAKEN AT MILOS, GREECE. A

FRENCH FIRM ALSO WILL DO THE DRILLING FOR THE U.N. GEOTHERMAL PROJECT IN KENYA.

8. THE FRENCH GEOPHYSICAL EFFORT HAS STRESSED EM (ELECTROMAGNETIC) AND MAGNETOTELLURIC METHODS. SEISMIC NOISE STUDIES ALSO ARE IN PROGRESS.

9. POSSIBLE COOPERAIVE PROJECTS MIGHT INCLUDE: (1) INTERNATIONAL COMPARATIVE STUDIES OF LEGAL ASPECTS OF THE PRODUCTION OF GEOTHERMAL ENERGY; (2) METHODS OF PREVENTING SILICA SCALING; (3) MODELING OF GEOTHERMAL SYSTEMS; AND (4) A PROGRAM INVOLVING UNCLASSIFIED

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COMPUTER ANALYSIS OF HEAT TRANSFER AND FLUID FLOW CHARACTERISTICS IN DRY HOT ROCK SYSTEMS FOLLOWED BY EXPERIMENTAL PROGRAMS. THIS LATTER ACTIVITY WOULD BE A PARTICULARLY INTERESTING CASE OF COLLABORATION IN VIEW OF THE REMARK OF PROF. GOGUEL WHO SAID THAT THE FRENCH WERE ALSO TRYING TO BROADEN THE WORK OF THEIR ATOMIC ENERGY LABORATORIES TO INCLUDE NON-NUCLEAR ENERGY RESERACH. HE EMPAHISIZED THE SPECIAL COMPETENCE OF THE GRENOBLE GROUP IN HIGH VELOCITY HEAT TRANSFER WHICH HE INDICATED WAS APPLICABLE TO SOME PHASES OF GEOTHERMAL ENERGY RESEARCH. THE COMMON INTEREST OF THE US AND FRENCH NUCLEAR ENERGY LABORATORIES IN HEAT TRANSFER AND FLUID FLOW IN GEOLOGICAL FORMATIONS SHOULD BE A USEFUL STARTING POINT. CONTACT POINTS IN FRANCE ON THIS PROJECT ARE: MR. MOUDIN, CHEF DU D.T.C.E. (DEPARTMENT DE TRANSFERT ET CONVERSION D'ENERGIE DE GRENOBLE) AND MR. SEMERIR, CHEF DU STT (SERVICE DE TRANSFER THERMIQUE). VOLPE

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